Discovery ProgramAO2000:
Preproposal Conference
Minutes 06/06/00

On June 6, 2000, a preproposal conference was held for the Discovery Program 2000 selection: Dr. Jay Bergstralh of NASA Headquarters in Washington, D.C convened the conference (Attachment 1). Dr. Bergstralh provided an introduction to the group that included a discussion of the purpose of the conference, introduction of key participants, and an outline of the agenda for the proceedings.

Following these matters, the rest of the morning was consumed with NASA presentations (Attachments 2,3,4,5) provided by Dr. Jay Bergstralh, Dr. Faith Vilas, Acting NASA Discovery Program Scientist, Wayne Richie from the Langley Space Science Support Office, Elaine Dobinson from JPL and Heather Lancaster from SAIC. The briefings provided a complete review of the Discovery Program 2000 planned evaluation and selection process.

The remainder of the conference was spent reviewing and responding to all of the written questions from the conference attendees. Questions were submitted both before and during the conference and each was discussed with answers provided by NASA. These questions and answers are provided (Attachment 6). At the conclusion of the preproposal conference, a list of action items was compiled by NASA (Attachment 7).

Attachments Provided

Attachment 1	**List of Attendees**
Attachment 2	**Presentation by Dr. Jay Bergstralh**
Attachment 3	**Presentation by Faith Vilas**
Attachment 4	**Presentation by Wayne Richie**
Attachment 5	**Presentation by Elaine Dobinson**
Attachment 6	**Question and Answers**
Attachment 7	**Action Items**

Attachment 1

List of Attendees

Bennett, David P.	University of Notre Dame
Bergstralh, Jay T.	NASA Headquarters
Betz, David	NASA/Goddard Space Flight Center
Carosso, Paul	Swales and Associates, Inc.
Chambers, Katherine	ITT Industries, Advanced Engineering & Sciences
Clark, Benton C.	Lockheed Martin Space Systems Company
DiBiasi, Lamont	L. DiBiasi Associates
Dobbs, Michael	ITT Aerospace
Dobinson, Elaine	Jet Propulsion Laboratory
Donaldson, Chad	SAIC
Harris, Walter M.	University of Wisconsin, Madison
Hauser, Joseph A.	Naval Research Laboratory
Holmes, Charles P.	NASA Headquarters
Kaufman, James M.	Jet Propulsion Laboratory
Keddie, Susan	SAIC
Kieckhefer, Edward H.	Jet Propulsion Laboratory
Kozon, Bob	NASA/Goddard Space Flight Center
Lancaster, Heather	SAIC
Landis, Geoffrey A.	Ohio Aerospace Institute
Ledbetter, Kenneth	NASA Headquarters
Majower, Herbert	Majower Associates
McGuffey, Douglas	Swales and Associates, Inc.

List of Attendees

Nilsen, Erik N.	Jet Propulsion Laboratory
Perry, R. Brad	NASA/Langley Research Center
Reese, Terrence G.	Lockheed Martin Missiles & Space
Richie, R. Wayne	NASA/Langley Research Center
Sharp, William E.	ITT Aerospace
Sims, Jon	Jet Propulsion Laboratory
Sims, Michael H.	NASA/Ames Research Center
Sneiderman, Gary	NASA/Goddard Space Flight Center
Sofge, Al	NASA Headquarters
Sorensen, Trevor	Honeywell International, Inc.
Thompson, Steve	Spectrum Astro Inc.
Tucker Jr., Robert L.	NASA Headquarters
Vane, Gregg	Jet Propulsion Laboratory
Vilas, Faith	NASA/Johnson Space Center

Attachment 2

DISCOVERY

AO2000 Preproposal Conference

AO Overview & Review Process

Dr. Jay Bergstralh

June 6, 2000

Agenda

08:30a	Coffee/Registration	
09:00	Introduction	Jay Bergstralh
09:15	AO Highlights/Changes	Jay Bergstralh
09:45	Science Review and Evaluation	Faith Vilas
10:15	Coffee Break	
10:30	TMCO Review and Evaluation	Wayne Richie
11:00	Special Topics	
	PDS	Elaine Dobinson
	Electronic Submits	Heather Lancaster
	TBD	TBD
11:20	Q & A’s	Jay Bergstralh
12:00	Adjourn	

Introduction

- Welcome to Discovery AO 2000 PPC
- Introductions

  HQ: TBD

  NPRS (NASA Peer Review Services): Heather Lancaster, et al

  JSC: Faith Vilas

  LaRC: Wayne Richie
- Purpose of PPC: To provide a direct interface with the community before NOI's/Proposals with goal of providing AO clarification to assure best quality proposals.
- NOTE: PPC is being videotaped; copies can be requested via NPRS
- Agenda for Meeting
- Additional Points to be Made
  - NPRS will be available to discuss electronic submittal
  - Blackout following this conference: POC/Bergstralh
  - Any changes necessary will be posted on the OSS and Discovery Program Acquisition Homepage

AO CORRECTIONS

1. The evaluation weightings in Section 7.2.1 are incorrect for data buys. The correct weightings are:
    - The scientific merit of the investigation (30)(50)
    - The NASA OSS cost (20)(25)
    - The technical merit and feasibility of the science investigation (20)(25)
    - The feasibility of the implementation scheme (20)(0)
    - Quality of plans for education/public outreach, new technology and small disadvantaged businesses (10)(0)

AO HIGHLIGHTS
What's Unchanged in this AO?

- **Two-Phase, One-Step Procurement**
  - Phase I: Solicit science proposals with sufficient implementation information to evaluate risk, expected total cost to NASA, and commitment to other programmatic goals. Select 3-5 proposals and award contracts for Concept Studies, with contract options for Phase B, Phase C/D, and Phase E. (A Mission of Opportunity could be selected for implementation at this point.)
  - Phase II: Evaluate Concept Study Reports, and downselect to one or two investigations for implementation.
- **Science Investigations must support either the Solar System Exploration theme or the search for extrasolar planetary systems element of the Astronomical Search for Origins theme.**

AO HIGHLIGHTS

What's Unchanged in this AO?

- **Earth Orbital Discovery missions (e.g. telescopes) can be proposed for Shuttle launch**
  - Cost for proposal purposes must be included.
  - Must meet Shuttle use policy
- **Contributions remain at 1/3 of Phase C/D(excluding launch vehicle).**
- **Mission phases may continue to be broken into Phase B, C, D, and E since NPG 7120.5B does not prohibit.**
- **Missions of Opportunity including data buys.**

AO HIGHLIGHTS
What's New in this AO?

- **OSS Cost Cap: $299M FY 01**
- **Mission launch date nlt September 30, 2006**
- **Missions of Opportunity must require NASA commitment before December 31, 2001**
- **Missions of Opportunity definition and cost cap changed:**
  - Individual investigations may be proposed for flight on **non-Code S missions**. (excluding weapons related military)
  - Cost cap of **$35** M.
- **Roles and responsibilities for Co-I's must be defined in proposal.**
- **NOI's not mandatory as in AO 98**
- **No requirement for copies of Phase I proposals to Code I @HQ.** Will be required at Downselection however.
- New stringent ITAR requirements specified for non-US participants
  - Export licensing for non-domestic goods and services is emphasized

AO HIGHLIGHTS
What's New in this AO?

- All eligible missions including those with the same or similar science goals as missions already in OSS Strategic Plan may *now* be proposed (same as was in AO 96).
- " It is NASA's intention that low cost, narrowly defined missions will be considered on an equal footing with more expensive, broadly defined missions."
- Funding for Downselection Concept Studies has been raised to $450K for 3-5 proposals.
- Modifies the overall evaluation process (see Section 7.1) to allow a Q&A period if needed (same as was in AO 96).
- The NASA Peer Review Services has changed from LPI to Global Science and Technology with subs IDI (InDyne Inc) and SAIC (note new POC email and mailing addresses in AO).

AO HIGHLIGHTS
What's New in this AO?

- Inclusion of a Participating Scientist Program (PSP), and/or a Data Analysis Program (DAP) have been added as an evaluation consideration within the Scientific Merit evaluation criterion.
- Options for extended missions are now encouraged, but should not be proposed as part of the baseline proposal.
- Evaluation criteria weightings are now specified as opposed to "the riddle" used in prior AO's.
- All Other Program Factors (E/PO, SDB, and new Technology) are still evaluation criteria but are NOT considered during Categorization.

AO HIGHLIGHTS
What's Under Consideration?

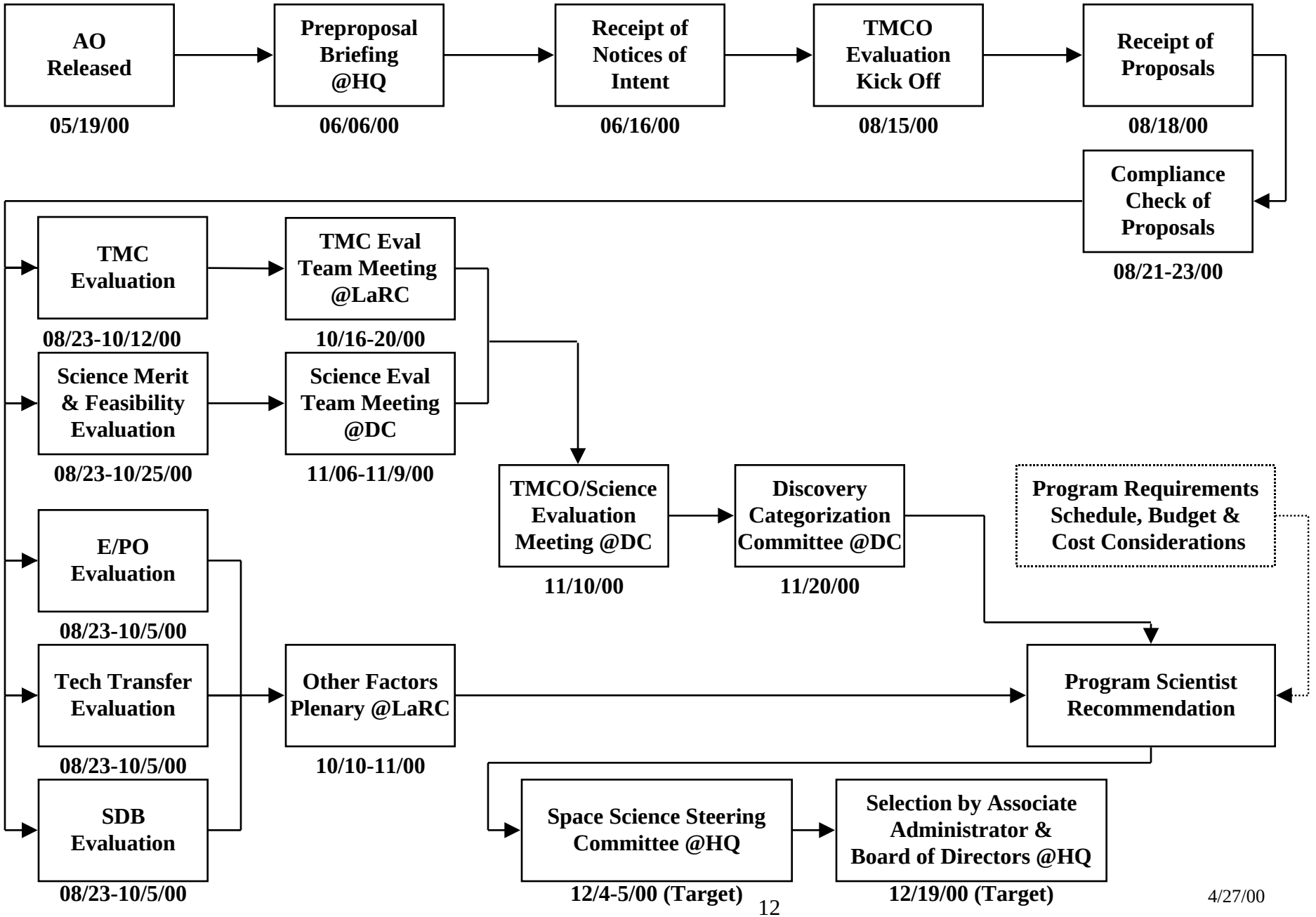
- **A new class of Discovery Missions: Micromissions**
  - Separate AO to be released next year for this class of missions.

AO CLARIFICATIONS

- Concept Study Cost must be included in total mission cost cap.
- Concept Study is to be considered Phase A.
- Proposal commitment signatures can be on resumes, letters of commitment, or both.
- Institution of Project support may also sign cover page in addition to PI/institution.
- Funding profile chart (AO Appendix G) indicates likely available yearly funding for a single mission. Proposals should try to stay within these guidelines for needed annual authorizations.
- Proposed costs for Participating Scientists and/or Data Analysis Programs should be provided with the proposal, however, these will not be counted against the total mission cost cap.
- Options for extended missions will not be counted against the total mission cost cap.

Draft

Discovery Proposal Evaluation Process



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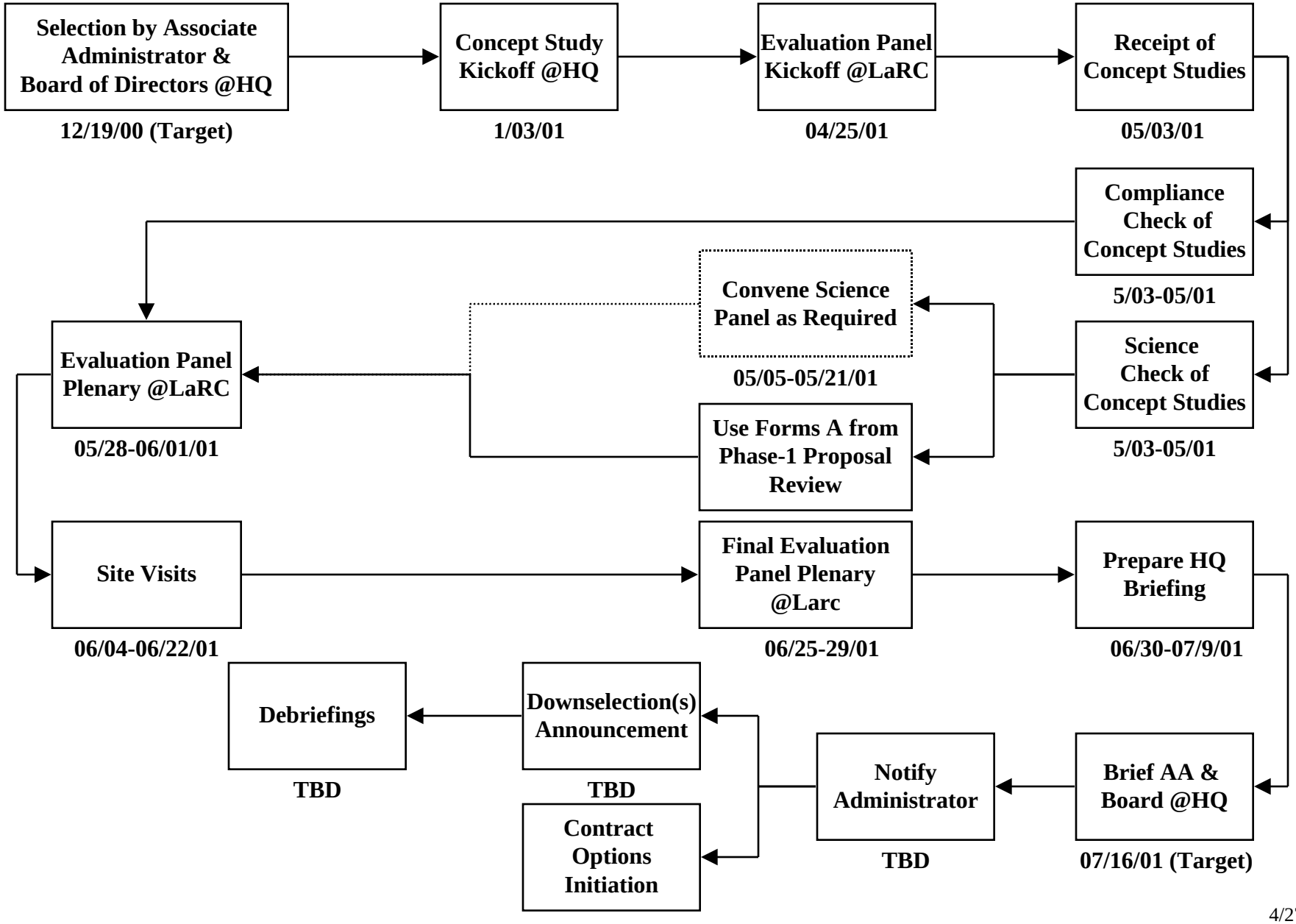
Discovery Downselect Schedule/Evaluation Flow



Attachment 3

DISCOVERY
AO2000 Preproposal Conference

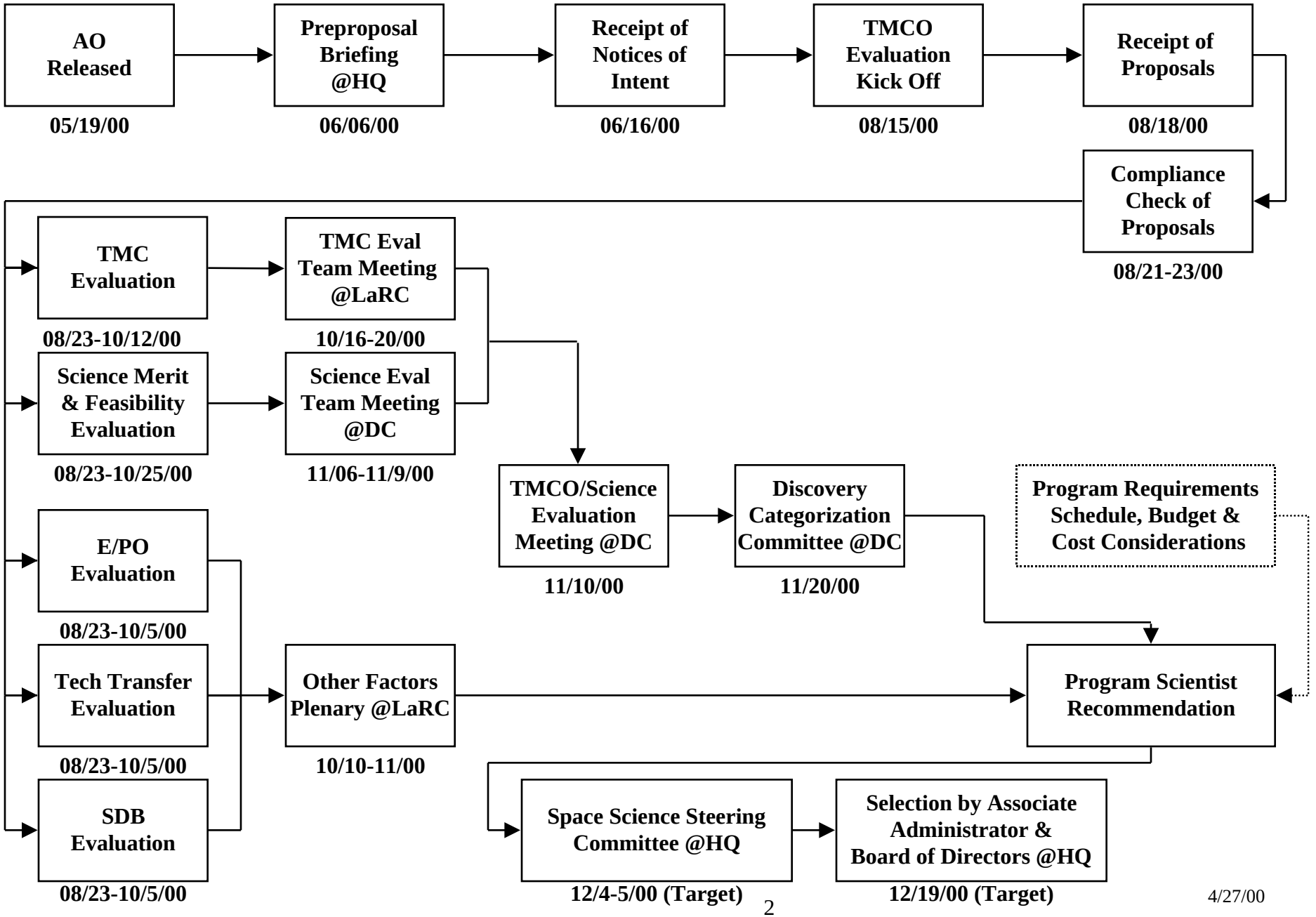
Science Review and Evaluation Process

Dr. Faith Vilas

June 6, 2000

Draft

Discovery Proposal Evaluation Process



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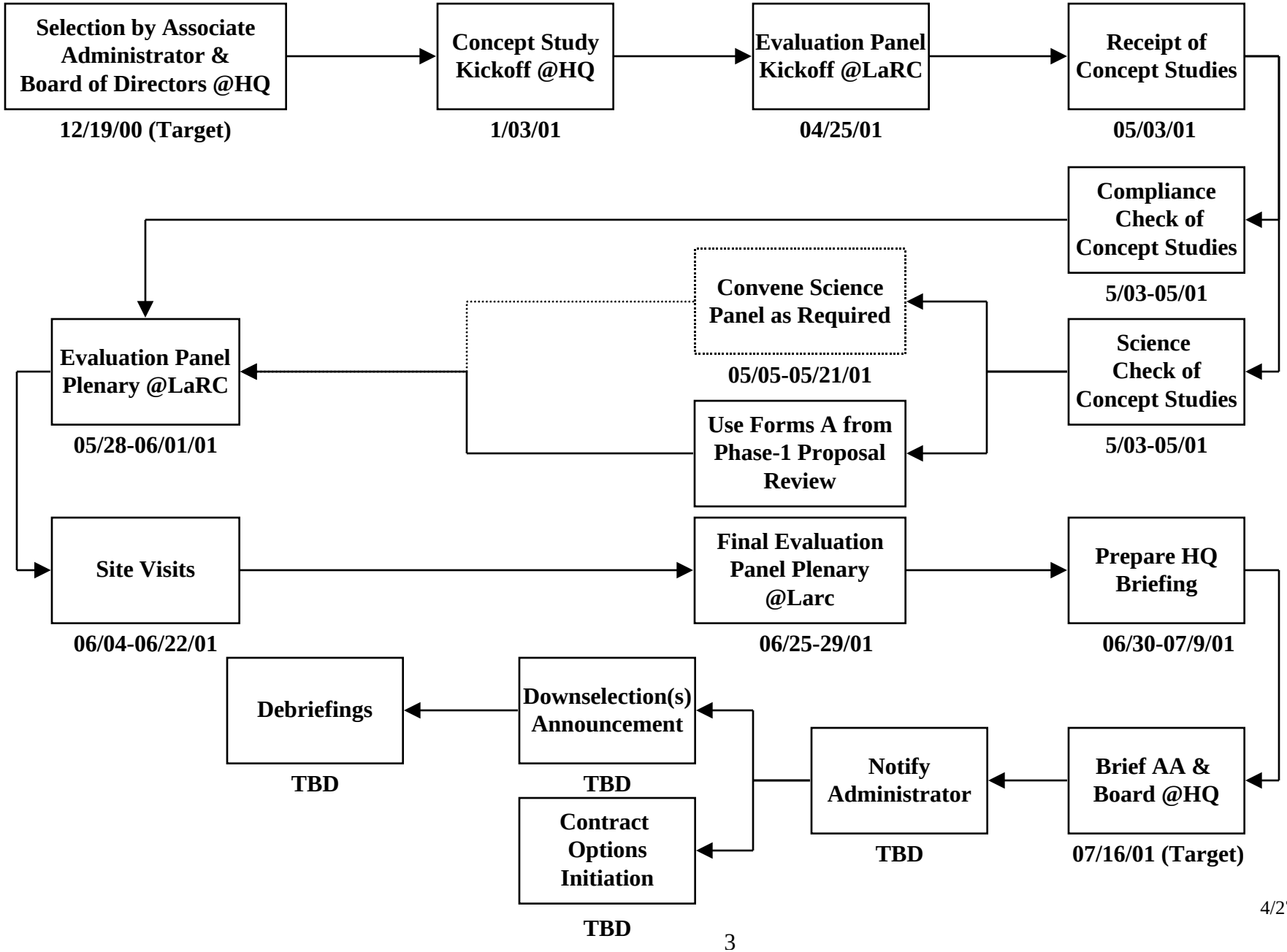
Discovery Downselect Schedule/Evaluation Flow



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Proposal Evaluation Criteria

Proposals are evaluated using the five criteria from AO (Section 7.2). These criteria with their approximate percentage weights given in parenthesis are*:

The Scientific merit of the investigation (30)(50)**

- **Total cost of the mission to NASA Code S (20)(25)**
- **Technical merit and feasibility of the science investigation (20)(25)**
- **Feasibility of the mission implementation scheme (20)(0)**
- **Quality of plans for Education/Public Outreach, new Technology, and Small Disadvantaged Business Activities (10)(0)****

* Note: The first figure in parenthesis is for Discovery Mission Investigations and Mission of Opportunity Investigations. The second figure is for Mission of Opportunity data buys only.

**Note: The data buy percentages have been corrected since AO release!

CATEGORIZATION PROCESS

CATEGORIZATION OF PROPOSALS (NFSD 1872.403)

CATEGORY I: Well conceived and scientifically and technically sound investigations pertinent to the goals of the program and the AO's objectives and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that any essential flight hardware or other support can be delivered on time and that data can be properly reduced, analyzed, interpreted, and published in a reasonable time. Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.

CATEGORY II: Well conceived and scientifically or technically sound investigations which are recommended for acceptance, but at a lower priority than Category I.

CATEGORY III: Scientifically or technically sound investigations which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities.

CATEGORY IV: Proposed investigations which are recommended for rejection for the particular opportunity under consideration, whatever the reason.

Space Science Steering Committee

Purpose: 1. To review Evaluation Process to assure compliance with Federal Regulations (FAR Supplement 1872.406)
2. To assure that the Evaluation Process conducted fairly and evenly
3. To assure that the quality of documentation substantiates the findings

Composition: An independent panel composed of Headquarters Civil Service personnel appointed by the AA of Code S specifically to do this review. None of these reviewers can have participated in the Evaluation or Categorization process.

Function: To assure that the Process has been completed correctly and is ready for Selection, or to direct corrective actions to deficiencies.

AO Options and Evaluation Expectations

Degree to which proposals demonstrate Scientific Merit and Technical Merit and Feasibility result in grades ranging from BEST=9 to WORST=1.

Mission Investigations

- Scientific Merit
  - -fill gaps for planetary science
  - -progress on SSE goals
  - -spt/complement other missions
  - -value of science floor

- Tech Merit and Feasibility
  - -science team and quals
  - -right instruments for data
  - -adequate data
  - -data analysis/archive plan
  - -investigation resilience
  - -speed data to public domain
  - -PSP and/or DAP

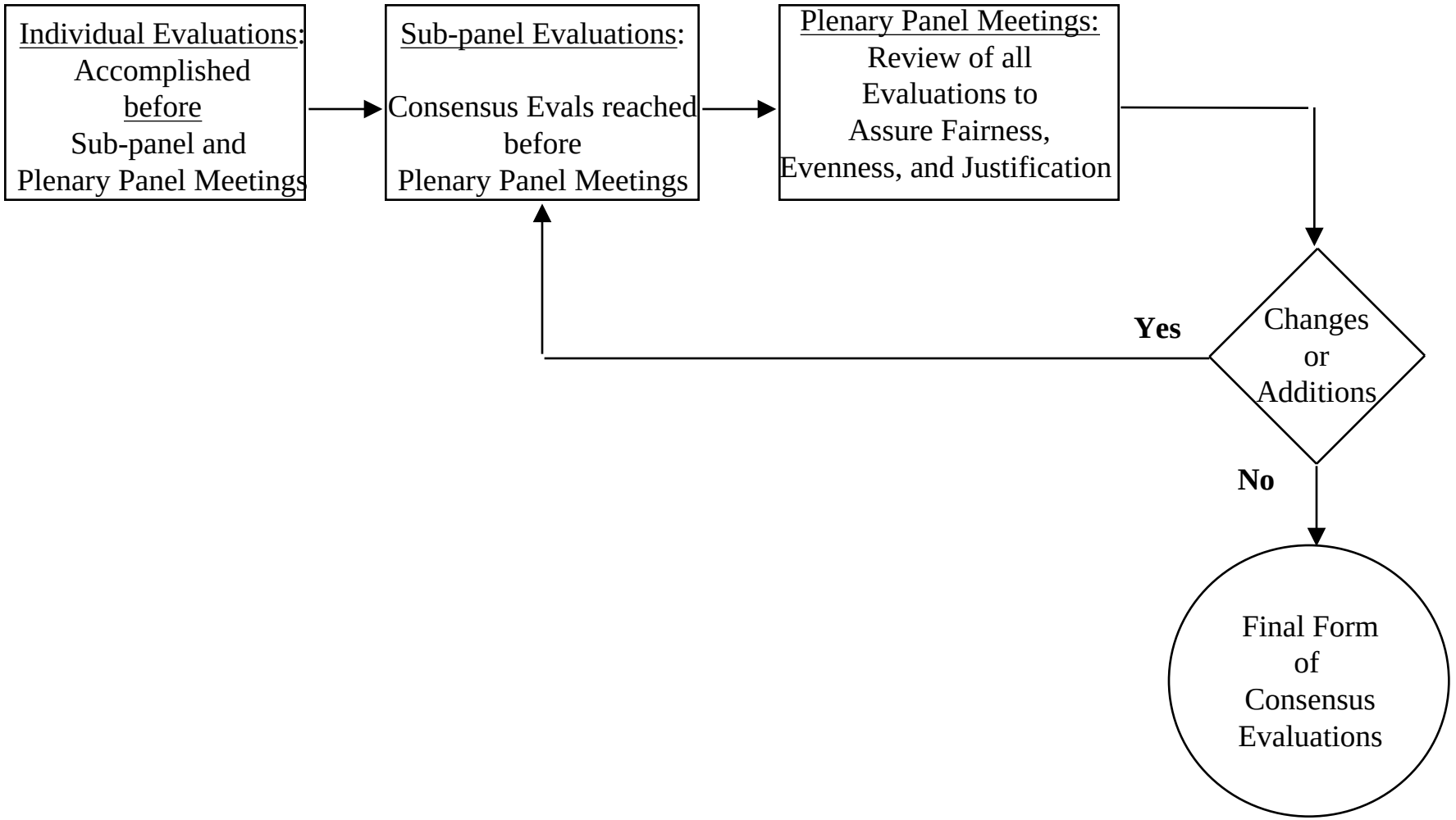
Missions of Opportunity

- Scientific Merit
  - -fill gaps for planetary science
  - -progress on SSE goals
  - -spt/complement other missions
  - -value of science floor

- Tech Merit and Feasibility
  - -science team and quals
  - -right instruments for data
  - -adequate data
  - -data analysis/archive plan
  - -investigation resilience
  - -speed data to public domain
  - -PSP and/or DAP

Science Review and Evaluation Process

Science Panel Flow



Discovery Science Evaluation Principles

- Selection of high-quality scientific investigations that assure the highest science value for cost.
- Selection of scientific investigations consistent with the OSS Strategic Plan.
- To evaluate smaller, lower cost, focused missions on an equal footing with larger, higher cost, wide scope missions.

- Basic Assumptions:
  - That proposer is proposing science missions with conservative development efforts required.
  - That proposer has adequate contingency and reserves to accomplish the mission…no HQ APA.
  - Missions that cannot maintain schedule, budget, and scientific requirements are subject to cancellation.

Science Evaluation Factors

Scientific Merit:

- How well does the mission fill important gaps in knowledge and/or provide for fundamental progress in planetary system(s) science?
- Does the proposed investigation support or complement ongoing missions or provide ancillary benefits to planetary system(s) science?
- At the performance floor, will the investigation still have high scientific value?

Technical Merit and Feasibility:

- Can the proposed investigation approach (measurement objectives, data analysis, etc.) be expected to achieve the proposed scientific goals and objectives?
- Does the science investigation team have the appropriate expertise, experience, and organizational structure to successfully complete the proposed investigation ?
- Will the proposed instrumentation support the measurement objectives of the investigation (appropriate type of data with necessary resolution, dynamic range, sensitivity, SNR, etc.)?
- Will the volume of data (or quantity of samples) returned be sufficient to complete the investigation?

Science Evaluation Factors (continued)

Technical Merit and Feasibility: (continued)

- Resiliency: In the event of development problems, will the proposed descoping plan permit "graceful degradation" to performance floor?
- Data analysis and archiving: Is there an approach for designing and delivering standardized (PDS) data products? Will data (or samples) be released to the public domain in a timely fashion? Does the data analysis plan specifically include physical interpretation and publication of results in refereed journals? Are there adequate resources to accomplish these tasks?
- Does the proposal offer a PSP or DAP or an Optional Extended Mission?

Science Evaluation Process

- **Science Evaluators are:**
  - Best (non-conflicted) academic, CS, contractor, consultant, and other government agency personnel available to support the review
  - Peers in the areas of expertise they evaluate
  - External reviewers for all proposals for a particular area of specialty and provide findings but do not participate in final ratings

- **Science Findings:** Are the consensus of the entire panel
  - Every proposal evaluated by a subpanel team composed of multiple reviewers with a mixture of discipline expertise (at least 3 of whom have read each proposal)
  - After subpanel consensus, all proposals and findings discussed by the entire panel (many people)
  - Final ratings are agreed to in plenary

Attachment 4

DISCOVERY

AO2000 Preproposal Conference

TMCO Proposal Review & Evaluation Process

Wayne Richie

June 6, 2000

Discovery AO TMCO Changes/Issues

- For Proposal submit, Science is weighted most heavily while the TMCO evaluation will seek to verify that proposals are: likely doable, maybe doable, likely not doable.

- We expect, however, to be able to do substantial high level analysis of the implementability to assure that high risk proposals are not selected over those that likely can be done.
  - During Downselect we will be conducting an even more thorough analysis once the Science has been selected.
  - AO and Appendix B has been modified to document and clarify information TMCO needs for risk assessment

- In addition, E/PO self-assessment completed to provide greater emphasis.

Significant changes made in evaluation methodology and focus

- - New Appendix C to aid proposers

- Other areas under consideration/in work
  - Discovery Program Library: Contents dynamic; check revisions; changes to NOI registrants
  - Finalization of Guidelines for Concept Study Preparation in work.

TMCO Principles

- **All Proposals will be reviewed to identical standards**
  - Evaluation Plan approved by HQ and in place before proposals arrive
  - All proposals receive same evaluation treatment in all areas and by all reviewers
  - The TMCO process is used by SSSO to support all OSS evaluations with a standard process.

- **All evaluators be peers in the area of expertise that they evaluate.**

- **Basic Assumption**: Proposer is the expert on his/her proposal
  - **TMCO:** Task is to try to validate proposers' assertion of Low Risk
  - **Proposer:** Task is to provide evidence that the project is Low Risk

TMCO Process

- **TMCO Evaluators are:**
  - Best (non-conflicted) CS, DOD, contractor, consultant, and other government agency personnel available to support the review
  - Peers in the areas of expertise they evaluate
  - Specialists review all proposals for a particular area of specialty and provide findings but do not participate in final ratings (instruments, cost, etc)

- **TMCO Findings:** Are the consensus of the entire TMCO panel
  - Findings : As expected (no finding), above expectations (strengths), below expectations (weaknesses). Findings result in Risk rating (low, medium, high)
  - Every proposal evaluated by a subpanel team
  - After subpanel consensus, all proposals and findings discussed by the entire panel
  - Final ratings are agreed to in plenary

AO Options and Components

Mission Investigations	Missions of Opportunity Investigations*
o Investigator-led Team	o Investigator-led Team
o Investigations - Data Analysis - Data Archiving - Instruments	o Investigations - Data Analysis - Data Archiving - Instruments (if applicable)
o Spacecraft	o NA
o ELV or Shuttle	o NA
o Ground System	o Investigation Ground System (if applicable)

AO Options and Evaluation Expectations

Mission Investigations

- Feasibility of Implementation
  - -mission design
  - -spacecraft & interfaces
  - -ELV/Shuttle
  - -mission cost realism
  - -management
  - -ground system
  - -schedule
  - -I&T
  - -concept/Ph B plans
- Other Program Requirements
  - -degree E/PO meets program goals
  - -degree Technology meets program goals
  - -degree SDB meets program goals

Missions of Opportunity Investigations

- Feasibility of Implementation*
  - -mission is planned and designed
  - -investigation spacecraft interfaces
  - -investigator invited for flight
  - -investigation cost realism
  - -investigation management
  - -investigation ground system (as applicable)
  - -investigation I&T (as applicable)
  - -define open design studies
- Other Program Requirements*
  - -degree E/PO meets program goals
  - -degree Tech meets program goals
  - -degree SDB meets program goals

* Not assessed for data buy proposals.

TMCO Overview
TMC Considerations
for Discovery Mission Investigations

Generally, the degree to which proposals address the following factors directly relate to a grade of LOW, MEDIUM,OR HIGH RISK.

Spacecraft

Depth of Detail Margins
Simplicity vs.. ComplexityHeritage/Maturity
New Technology Redundancy
Design Life/Reliability

Instruments

Requirements/Interface Heritage/Maturity
Complexity/Difficulty Operations
Depth of Detail

Mission Design

Depth of Detail Difficulty/Complexity/Flexibility
Launch Vehicle

TMCO Overview
TMC Considerations (cont'd)
for Discovery Mission Investigations

Mission Ops/GDS/Communication

- Facilities (including ground stations)
- Complexity
- Depth of Detail
- Comm margins
- Team Experience/Roles

Systems Engineering

- Depth of Detail
- Complexity
- QA
- Trades
- Integration and Testing

Management/Organization/Structure

- Structure tied to Task/Teaming
- Detailed description (incl SOW)
- Maturity
- PI/PM Roles proper
- Org/key person Experience
- Evidence of Commitment

Risk Management

- Risk Assessment (& understanding)
- Reserves and Margins
- Technology Risk Mitigation
- Descope Plan

TMCO Overview
TMC Considerations (cont'd)
for Discovery Mission Investigations

Cost and Schedule

Cost Basis — Grassroots/Model
Variety of Techniques

Costs vs.. Tasks vs.. Organizations vs. Schedule
Cost Reserves and management
Cost savings/heritage
Cost Envelope (Comparison to Independent Estimates and Analogies)
Risks, Threats, Mitigation Levels
Cost Caps - Caps vs.. 20%
Technical Maturity vs.. Cost Estimate
Technical Complexity vs.. Cost Estimate
Past Experience of meeting Cost and Schedule
Schedule vs.. Tasks
Schedule Contingency and Reserve (funded/unfunded)

TMCO Overview
TMC Evaluation Objective

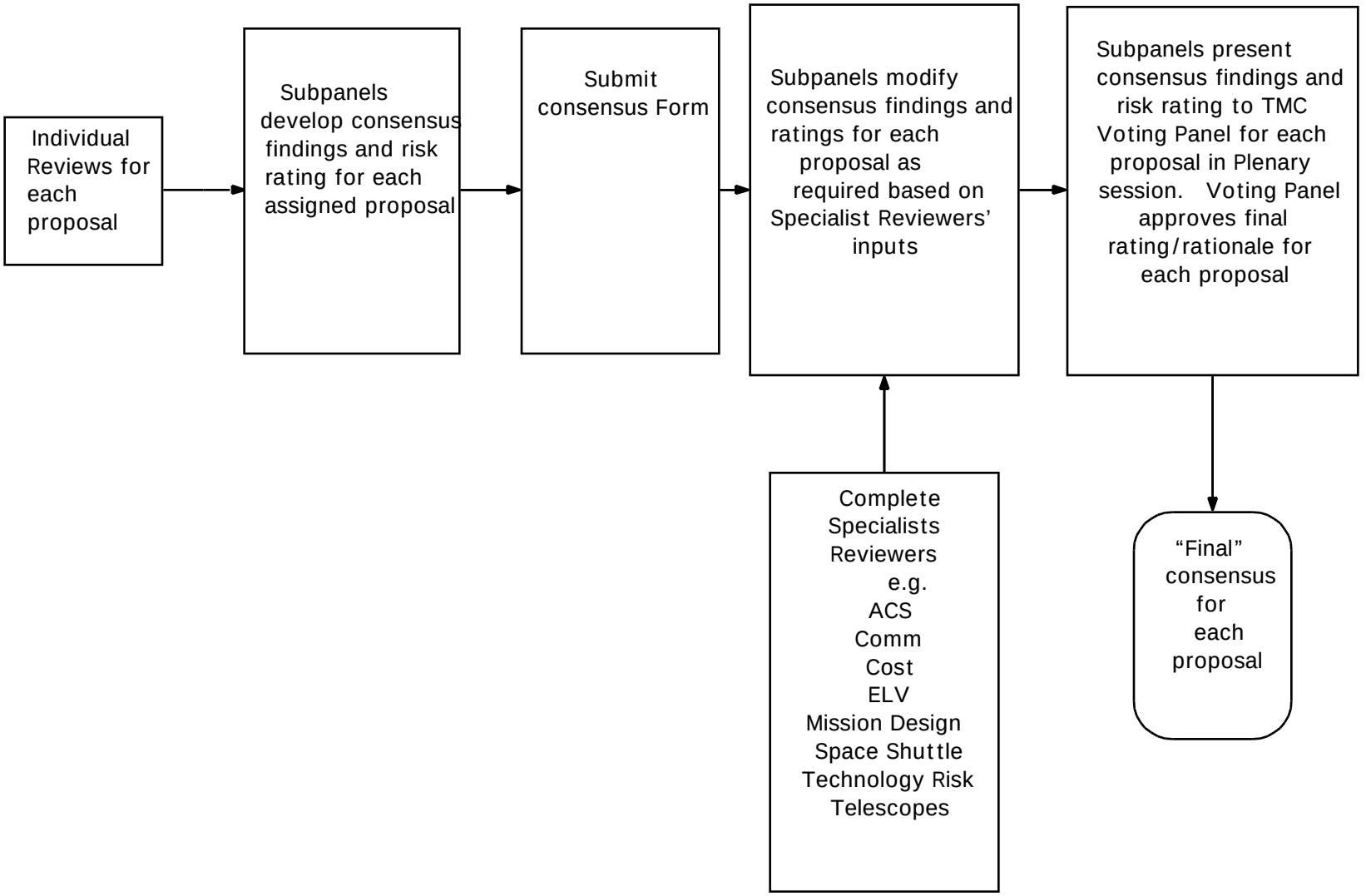
The TMC evaluation is to determine, for each proposal, the level of risk of accomplishing the scientific objectives of the mission, as proposed, on time and within cost.

3 bands of risk are defined: **Low Risk, Medium Risk and High Risk**

Exactly what constitutes Low, Medium, or High Risk is a complex issue, however:

High Risk may be considered as**:** **"**Even if this is the very best science, we recommend that it not be selected. It is very unlikely to be successful, as proposed."

TMCO Overview
TMC Panel Flow



TMC Proposal Evaluation

- **To receive a Low Risk rating a proposal should demonstrate that the proposal can be implemented as proposed:**
  - All risks for the project have been/are being identified and managed by the team, with plans to reduce or retire the risk before launch.
  - No risk exists for which there is neither a workaround planned, nor a very sound plan to develop and qualify the risk item for flight
  - The proposed project team and each of its critical participants are competent, qualified, and committed to execute the project.
  - The project will be self managed to a successful conclusion while providing reasonable visibility to NASA for oversight
  - The team has thoroughly analyzed all project requirements, and that the resulting resources proposed are adequate to cover the projected needs including, an additional percentage for growth during the design and development, and then a margin on top of that for unforeseen difficulties.
  - Reserve time exists in the schedule to find and fix problems if things do not go according to plan.
  - Any contributed assets for the project are backed by letters of commitment
  - The team understands the seriousness of failing to meet technical, schedule, or cost commitments for the project in today's environment: subject to cancellation.

TMCO Overview
Typical TMC Evaluation Questions to be Answered
for Discovery Mission Investigations

Will overall mission/project design (spacecraft, launch vehicle, ground system, mission ops) allow successful implementation of mission as proposed? If not, are there sufficient resources (time & $) to correct identified problems?

Does proposed design/development allow investigation to have a reasonable probability of accomplishing its objectives and include all needed tools? Does it depend on new technology that has not yet been demonstrated? Are requirements within existing capabilities or are advances required? Does proposal accommodate sufficient resiliency in appropriate resources (e.g., money, mass, power) to accommodate development uncertainties?

Is there a Risk Management approach adequate to identify problems with sufficient warning to allow for mitigation without impacting the mission objectives? Does proposer understand their known risks and are there adequate fallback plans to mitigate them, including risk of using new technology, to assure that investigation can be completed as proposed?

TMCO Overview
Typical TMC Evaluation Questions to be Answered (cont'd)
for Discovery Mission Investigations

Is the schedule doable? Does it reveal an understanding of work to be done and time it takes to do it? Is there a reasonable probability of launching on time? Does it include schedule margin?

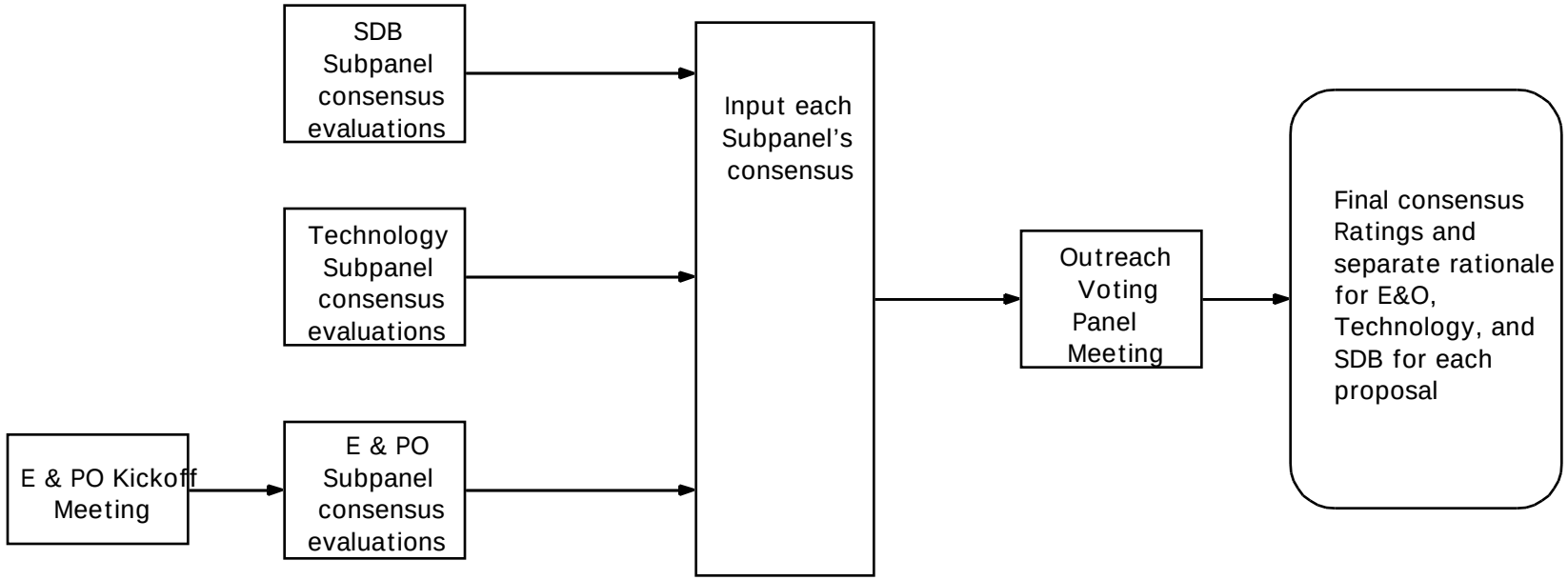
Will proposed management approach (e.g., institutions and personnel, as known, organization, roles and responsibilities, experience, commitment, performance measurement tools, decision process, etc) allow successful completion of investigation? Is the PI in charge?

Does the investigation, as proposed, have a reasonable chance of being accomplished within proposed cost? Are proposed costs within appropriate caps and does cost estimate cover all costs including full-cost accounting for NASA Centers? Are costs phased reasonably? Is there evidence in the proposal to give confidence in the proposed cost? Does the proposer recognize all potential risks/threats for additional costs or cost growth (e.g., added costs of utilizing the Space Shuttle, failed developments, etc)?

Cost Evaluation

- Cost Realism is Evaluated; a “should cost” or “government estimate” is NOT generated
- Cost Realism
  - Reported as Cost Risk (Low, Medium, High)
  - Based on Models, Analogies, Heritage, Grass Roots, Information From Proposals, and what the Evaluation Team is Worried About
  - Everyone is responsible for Cost Realism evaluation, not just Cost Team
- Cost Analysis by entire team and improves as evaluation progresses
- Initial cost analysis based on proposals (consistency checks, completeness, basis of estimate, contributions, full cost accounting, reserve levels and management, etc.)
- Both SAIC and Aerospace provided an independent cost analysis, using several independent cost models
- Cost threats, risks, and risk mitigation analysis developed and discussed.
- Science Plenary: Final answers to open issues/questions obtained to improve analysis
- All information from entire evaluation process provides final assessment.

TMCO Overview
Outreach Panel Flow



TMCO Overview
Outreach Considerations
for Discovery Mission Investigations

Generally, the degree to which proposals address the following factors directly relate to a grade of EXCELLENT, VERY GOOD*, GOOD, FAIR*, or POOR
* Applicable to E/PO ratings only

Education and Outreach (Commitment is a key factor: 1-2% ***Guideline***)

General:
1. Quality/scope/realism of proposed effort
2. Capability/commitment of proposer, with designated oversight by 1 or more Science team members
3. Establishment or continuation of partnerships with education and/or public outreach institutions
4. Plans for evaluating effectiveness and impact

Specific:
5. Support of national educational reform standards and efforts
6. Contributes to the underserved and/or underutilized groups
7. Potential for multiplier effects

TMCO Overview
Outreach Considerations (cont'd)
for Discovery Mission Investigations

Technology (both infusion and transfer)

• Degree to which proposal supports the OSS Strategic Technology Goals by:
- Infusion of Technology
  - Provides a plan for infusion
  - Provides heritage references for infused technology
  - Provides metrics to quantify achievement
- Transfer of Technology
  - Provides a plan to transfer appropriate technology
  - Identifies potential users
  - Provides data on why users will find technology useful

Small Disadvantaged Businesses

- Commitment to meet 8% SDB goal
- Past experience in meeting goals
- Planned SDB subcontracts vs. goal

Attachment 5

Archiving Data with the Planetary Data System

Elaine Dobinson

PDS Project Manager

http://pds.jpl.nasa.gov

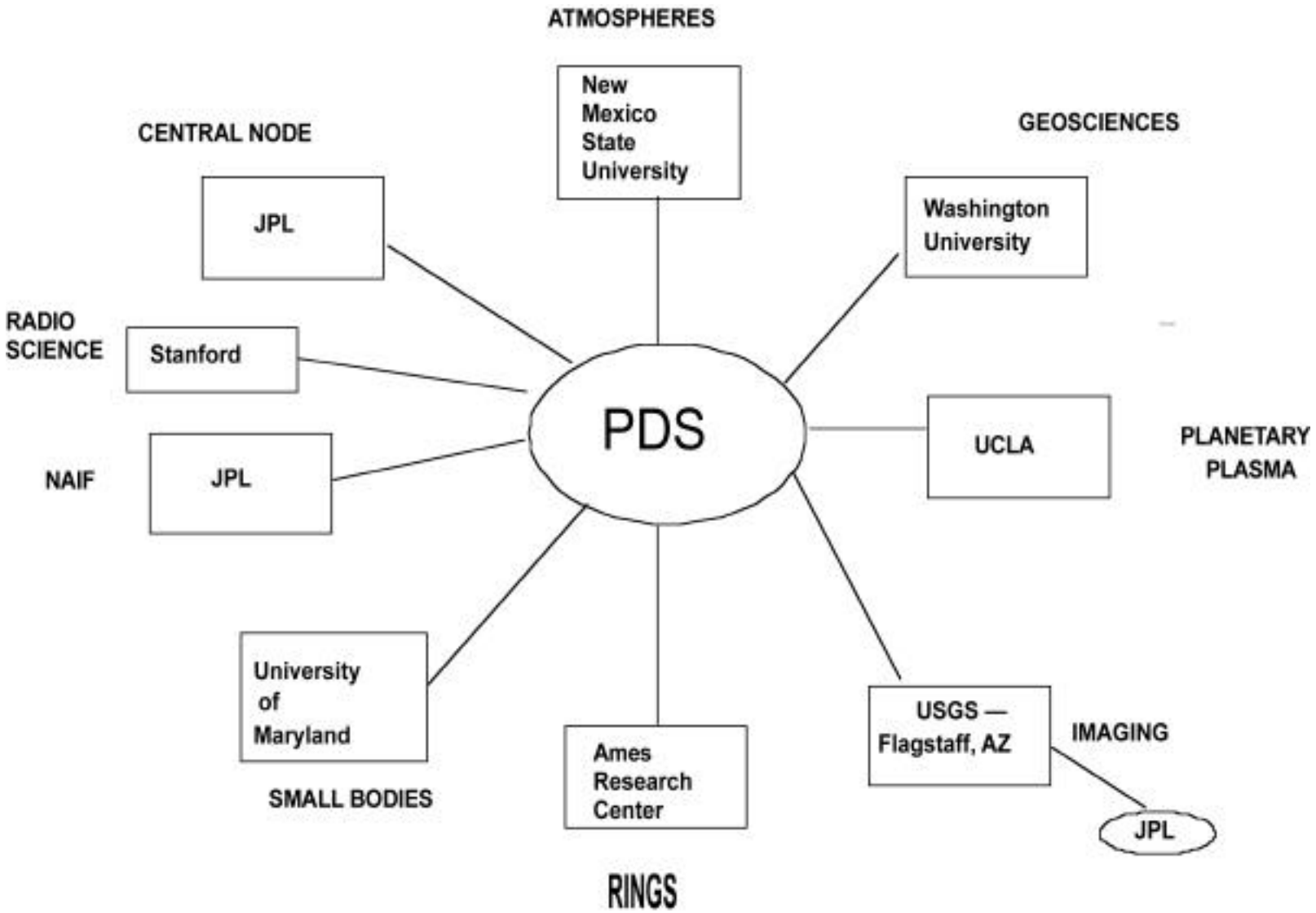
Purpose of this Talk

- **To familiarize you with the Planetary Data System (PDS)**
- **To describe the data archiving process in sufficient detail to allow you to properly scope the activity**
- **To let you know how the PDS can help**

What is the PDS?

- **PDS is the official planetary science data archive for the NASA Office of Space Science (OSS) Solar System Exploration (SSE).**
- **PDS is chartered to ensure that SSE planetary data are archived and available to the scientific community.**
- **PDS is a distributed system designed to optimize scientific oversight in the archiving process.**
- **The PDS has been in existence in its present form for 10 years.**

PDS Nodes and Institutions



Data Archived with the PDS

- **The goal of the PDS archiving system is for each data set to be autonomous, i.e., all information required to understand and interpret the data should be included in the archive. To that end, deliverable data include:**
  - Raw data
  - Data calibrated to physical units
  - Calibration data and algorithms
  - Ancillary data, e.g. observation geometry (SPICE)
  - Higher level data products (maps, projections, other aggregations)
  - Documentation for the data, instrument, flight project, etc. (metadata)

Data Archiving Process

- Archive Planning and Definition
  - Identify the data to be archived
  - Define end-to-end data flow through the ground system and the roles and responsibilities of the teams involved in producing final archive products
  - Generate the detailed archiving schedule
  - Document this (Project Data Management Plan/Archive Policy and Data Transfer Plan)
- Archive Design
  - Design the archive data products, PDS labels, catalog metadata, volume organization
  - Design data production and validation processes
  - Document this

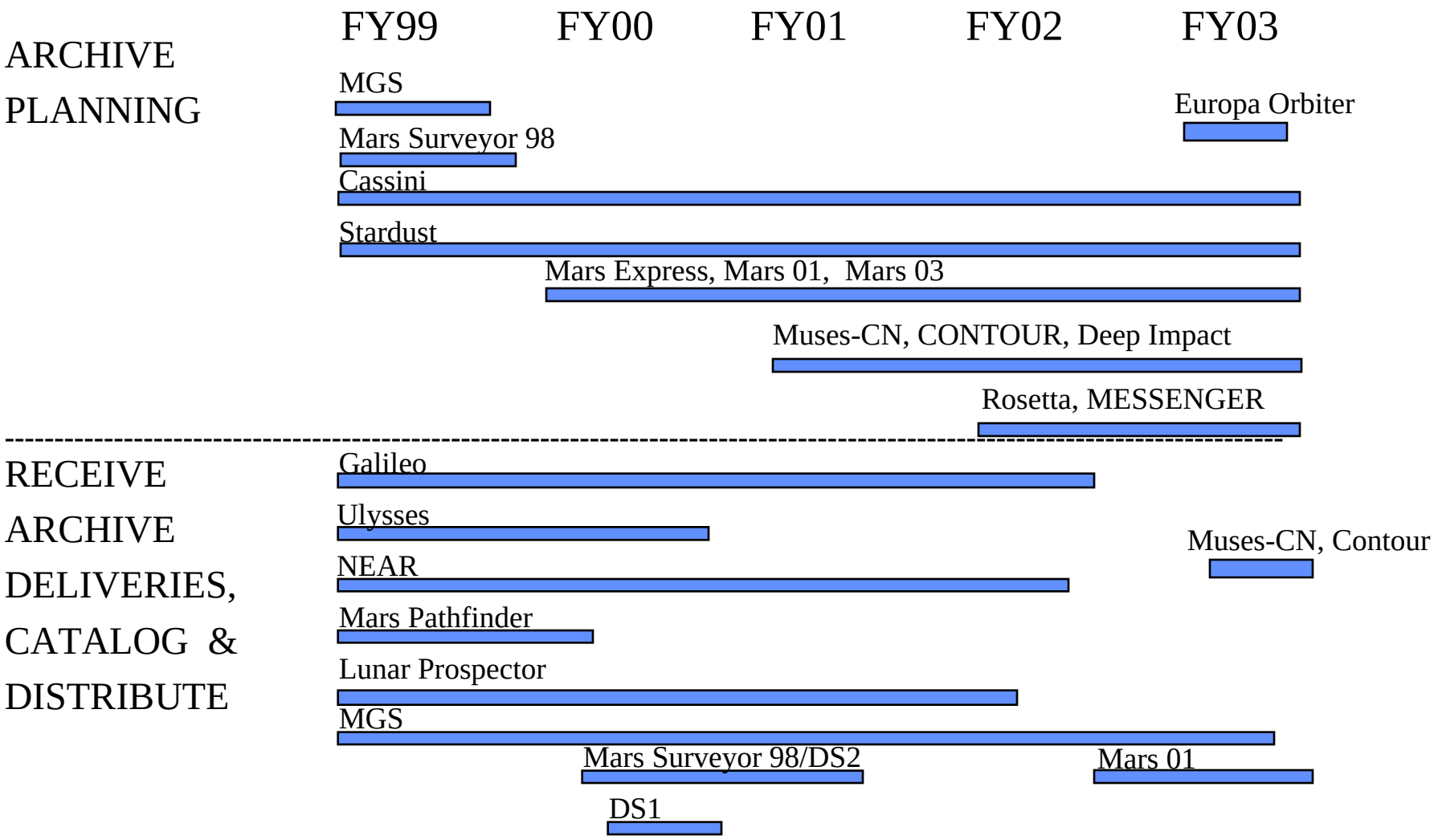
Data Archiving Process

- Archive Production
  - Generate and validate the data products
  - Submit to PDS for peer review
  - Correct liens
- Archive Distribution
  - Deliver data to PDS for archiving and distribution
  - Coordinate with PDS with respect to media replication, distribution lists, etc.

PDS Services

- **PDS establishes and maintains standards for high quality data archives.**
- **PDS works with missions to create complete data sets.**
  - PDS develops and maintains a suite of tools to help data producers create and validate archive-quality data products.
  - PDS personnel can be funded by the mission to perform mission archiving tasks.
- **PDS provides expert assistance to the scientists who use the archives.**
- **PDS ensures the viability of planetary data that might otherwise be lost.**

PDS SUPPORTED MISSIONS



For Further Information….

- **Log in to** *http://pds.jpl.nasa.gov*
- **Go to** Data Producer **for on-line standards information, sample archive plans, other help**
- **Contact PDS for any additional information required**

http://pds.jpl.nasa.gov

Attachment 6

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000

Q 1: The information requested in Appendix B, Section F seems to have increased over past AO's. Since this data clearly would be helpful to the evaluators in evaluating proposals, it is requested that the page count for Mission Implementation be increased.

A 1: The additional data items in Appendix B, Section F provide clarification requested by the community regarding all specific items that will be analyzed by TMCO during evaluation. For Step 1 proposals, the data provided should be sufficient enough to demonstrate the feasibility of the implementation concept. All prior "Selected" proposals have found ways of including graphs, charts, tables, etc. to exhibit sufficient data within the allotted page counts. Since Science considerations must outweigh all other considerations for Step 1 proposals, no increase in page count will be allowed.

Q 2: How should Phase F (Mission Extensions) costs be reported in Table B-1?

A 2: Phase F was a late addition to the AO with insufficient consideration and definition by NASA of exactly where and how to report these costs. Since Phase F represents "optional costs" to OSS, but do not count against the OSS Cost Cap, and since completed Cost Tables do not count against the page count limits, these costs should be provided in A SEPARATE TABLE similar to Table B-1.

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q 3: How should Participating Scientist Program(PSP) and Data Analysis Program (DAP) costs be reported in Cost Tables B-1 and B-3?

A 3: PSP and DAP were late additions to the AO with insufficient consideration and definition by NASA of exactly where and how to record these costs. Since PSP and DAP costs do not count against the OSS Cost Cap and since completed Cost Tables do not count against page count limits, these costs should be provided in SEPARATE TABLES similar to Tables B-1 and B-3. Separation of these costs from each other and from Phase F costs is also required.

Q 4: The following Documents in the DPL appear to have not been updated:

1. **Discovery Launch Services Information Summary**
2. **Discovery Space Shuttle Launch Opportunities**
3. **Guidelines for Concept Study Report Preparation**
4. **Concept Study Evaluation Criteria**
5. **Cost Element Definitions**

A 4: Documents 3 and 4 are not required for proposal preparation and will be revised in the next month. Documents 1, 2, and 5 have already been updated and revised although the revision date was not corrected in the DPL. This revision date will be March 2000 and will be corrected. Since its revision, Document 2 has been revised one additional time with some very minor corrections. Copies of this document were available at the PPC and the DPL will be amended.

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q 5: Can the detailed E/PO cost information requested in the AO be reduced?

A 5: No, the data requested provides information that helps evaluators analyze the realism of the proposed program and must be provided to the extent possible.

Q 6: Is E/PO cost template #3 correct? What is meant by the first line reading "Co-I Institution #1"?

A 6: Template #3 is a bit confusing and needs the following clarification: The purpose of this template is to discern which scientists (PI and Co-I's) and other key personnel are supporting the E/PO program and at what percentage of their time and at what costs in the budget. You may ignore template headings and simply respond as needed for this data in this template.

Q7: How many proposals will be selected for downselect? How many will be selected for implementation?

A7: 3-5 proposals will be selected for downselect and the current projection is one will be selected for implementation, but this depends on quality of the mission science and the proposed cost.

Q8: How many Co-I's are reasonable to be proposed?

A8: NASA cannot specify what number is reasonable for a particular proposal. As the AO specifies roles and duties of each named Co-I must be provided along with funding for the Co-I's.

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q9: If foreign hardware is being procured, is ITAR involved?

A9: As answered by Bob Tucker of Code I in the PPC, this is dependent upon many factors. It is safer to consult directly with Code I on the specific hardware in question.

Q10: When is the period for questions to be sent for proposal clarification stated in the AO?

A10: The week of November 6, 2000.

Q11: Is the mission funding profile provided in the AO an absolute limitation?

A11: The mission funding profile is just NASA's best estimate on available funding. This is subject to change, however proposers should try to stay reasonably close to these defined limitations.

Q12: What is meant by "Graceful degradation" as discussed in the Science Evaluation briefing?

A12: Proposals should define the decision process, milestones and savings for mission descopes, such that the science performance floor is safeguarded.

Q13: Will the results of this Discovery evaluation be compared with findings from prior evaluations to assure continuity?

A13: NO. Each new proposal and evaluation team findings are considered independent of prior submits and results.

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q14: There was a proposition at the last Discovery workshop to allow proposing PI's to come to DC at the end of the proposal evaluation to brief Dr. Weiler regarding their proposed science. Is this still under consideration?

A14: This is still being considered. When the evaluation plan is developed, many details will need to be worked out such as determining if all PI's come to DC or just those with category 1 proposals. The decision will be made before proposals are due and will be made public. This option is of course voluntary, if in fact this option is implemented.

Q15: Is it true that there will be instrument experts on the science panel for this evaluation?

A15: There has always been instrument expertise on the science panel for Discovery proposals. What is being considered this time is the addition of "instrument technologists" to assist the science panel in assessing the plans for building, testing and flying the proposed instrument. The TMCO panel, meanwhile only looks at instrument interfaces and requirements.

Q16: How does a proposed mission qualify as a "complementing" mission?

A16: "Complement" means that the mission investigation fills gaps of knowledge for other missions or adds to the accumulated database about the solar system body being investigated.

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q17: What is meant by "Extra Solar" and is there any preference for investigations that study Extra Solar planetary systems?

A17: Investigations for both the Solar System Exploration theme and the search for Extra Solar System planetary systems are being solicited by this AO. There is no preference for one or the other.

Q18: How many evaluation subpanels will there be, for Science, for TMCO?

A18: The number of subpanels will not be determined until NASA knows how many proposals are submitted and of what types.

Q19: Does the Small Disadvantaged Business (SDB) area in the AO mean to include "small business? Is there still a NASA goal of 8% for participation?

A19: The term Small Disadvantaged Business (SDB) does not include other categories of small businesses. The goal of 8 percent included in previous Discovery AOs measured the aggregate proposed participation of SDBs, women-owned small business concerns, HBCUs, and other minority educational institutions. Following the Supreme Court's decision in Adarand Constructors v. Pena, 115 S.Ct. 2097 (1995), the Department of Justice advised that evaluation credit may be given only for the participation of SDBs in underrepresented industries as determined by the Department of Commerce. The evaluation approach described in Appendix A, Section XIII, Paragraph A was revised, including the deletion of a specific numerical goal, to conform with this advice. However, as stated in Paragraph B of Section XIII, a subcontracting plan that includes an overall small business subcontracting goal will be required as part of contracts awarded as a result of this AO

Discovery AO2000 Pre proposal Conference
Q & A's June 6, 2000 (Continued)

Q20: Will the HQ NOI submit page be shutdown after the NOI date?

A20: After the NOI submit date (June 16th), the data in this site will be transferred to the proposal cover page site and thus will no longer be available for editing or new submissions. Proposers will be able to use their NOI as a starting point for their cover page. Any late NOIs (or late revisions to NOIs concerning CoI participation) should be emailed to the help desk address indicated on the WWW submission page.

Q21: For page count limits, how many pages does a fold out page count?

A21: Five (5) fold out pages are allowed in each proposal. Each foldout counts as one page.

Q22: Are small Radioisotope Thermoelectric Generator's (RTG's) allowed in proposals and is there a distinction made in regards to whether such a device generates heat vs power.

A22: The AO specifies that RTG's are <u>not permitted</u>. Other smaller radioactive sources (such as radioactive heating units or instrument calibration sources) are permitted. The total quantity of radio active material involved is a limiting factor since this drives the cost and schedule of the approval process.

Q23: Should the Notice of Intent and proposal cover page include collaborators?

A23: The primary purpose of identifying Co-I's in the NOI's and proposal Cover Sheets is to assist the Program Scientist in determining personnel and institutions that are conflicted for proposal evaluation purposes. The AO does not require that collaborators be named in that it is assumed that all critical collaborators would be identified, funded, and their roles and duties defined. In such cases these collaborators are almost always called Co-Investigators.

Attachment 7

Action Items/Status

1. Provide ELV costs and capabilities to the community, based on the completed ELV solicitation/ A revised document will be posted in the DPL by June 26, 2000.

2. Revise the Cost Element Definition Document/ A revised document has been placed in the Discovery Program Library (DPL)

3. Clarify AO SDB references to include Small & SDB and delete 8% goals/ see Q&A #19

4. Revise E/PO Proposal submit requirements if needed/see AO modifications

5. Clarify AO requirements regarding allowability, and reporting of collaborators/see Q&A #23

6. Post PPC Minutes w/attendees, briefing charts, and Q&A's/Posted

7. Revise Concept Study G/L's and Criteria Documents/ Not required for proposal submittal, however, this will be completed and posted in DPL in July.